

No. 1
in a Five-part
Series



Making **SENSE** of **MERCURY**

fact sheet

What is mercury?

Mercury is a naturally occurring element that is found in air, water and soil. It exists in several forms – elemental (also known as metallic mercury), inorganic and organic. Pure mercury, also called quicksilver, is a liquid metal that easily evaporates, giving off invisible, odorless and toxic vapors. Mercury cannot be created or destroyed.

Exposure to mercury – even small amounts – may cause serious health problems. (For more specific information, see the “Health risks of mercury exposure” fact sheet in this series.)

Mercury rarely occurs by itself in the environment. It is found in cinnabar ore mainly in Spain and Italy. The chemical symbol – Hg – is taken from Latin, *hydragyrum*, meaning liquid silver.

Although the discoverer is unknown, evidence shows the Chinese were using mercury before 2000 B.C. The ancients realized mercury was toxic and assigned the task of mining quicksilver to slaves and prisoners. Ancient Egyptian tombs contain vials of mercury, showing the ability to mine and refine mercury.

Over time, mercury has been used in a variety of products and applications including herbicides, some medicines and preparing felt for hats. The toxic effect of mercury in workers from hat factories during

the late 1800s led to the term “mad as a hatter.”

Mercury has many unique properties. It is the only metal that is a liquid at room temperature. Mercury is the heaviest known elemental liquid. It expands or contracts uniformly with changes in temperature, kills bacteria and fungi and is a good conductor of electricity, but a poor conductor of heat. Mercury readily combines with other metals such as gold, silver and tin. These compounds are called amalgams. The ease with which mercury combines with gold is the reason it is used in the recovery of gold from its ores.

Forms of Mercury

Elemental mercury is the pure form of mercury – that is, it is not combined with other elements. Most of us probably think of mercury as the shiny silver-white liquid used in thermometers. That’s elemental mercury. Elemental mercury comes from cinnabar ore – which contains mercuric sulfide. Elemental mercury is refined from mercuric sulfide by heating the ore to temperatures of more than 1,000 degrees Fahrenheit. This turns the ore into a vapor, which in turn is captured and cooled to form elemental mercury.

Elemental mercury has many uses. It is used in producing chlorine gas and caustic soda. It is used

in extracting gold from ore and items that contain gold. It is found in thermometers, thermostats, barometers, button batteries (used in watches, calculators and hearing aids), fluorescent bulbs (and other energy-efficient lighting), electrical switches and toys. It also is used in dental fillings. Silver-colored dental fillings (amalgams) contain about 40-50 percent elemental mercury.

Inorganic mercury forms when mercury combines with inorganic elements like chlorine, sulfur and oxygen. These combinations often are called mercury salts. Most inorganic mercury compounds are white powders or crystals – except cinnabar, which is red and turns black after exposure to light.

Inorganic mercury is found in items such as fungicides, antiseptics and ointments, disinfectants and some skin lightening creams. (For more products that contain mercury, see the “Mercury in the home” fact sheet in this series.)

Organic mercury forms when mercury combines with carbon – the essential element in all organic compounds. There are many organic mercury compounds, but the most common is methylmercury. Methylmercury forms naturally in water and soil and can build up to dangerous levels in fish. (For more products that contain mercury, see the “Health risks of mercury exposure” fact sheet in this series.)

Web Resources About Mercury

Below are Web addresses for more in-depth information.

- The S.C. Department of Health and Environmental Control (DHEC) provides an overview of mercury information at www.scdhec.gov/mercury.
- DHEC provides fish consumption advisories for the state at www.scdhec.gov/fish.
- For more information on recycling fluorescent and other energy-efficient lamps, visit www.scdhec.gov/brap.
- The U.S. Environmental Protection Agency (U.S. EPA) provides a wide variety of information on mercury at www.epa.gov/mercury.
- For more information about safe mercury management at home, visit www.epa.gov/epaoswer/hazwaste/mercury/disposal.htm.
- For more information about consumer products that contain mercury, visit www.epa.gov/mercury/consumer.htm.
- For more information on mercury in indoor paint and other indoor environmental concerns when remodeling, visit www.epa.gov/iaq/homes/hip-painting.html.
- For more information on the health effects of mercury exposure, visit www.epa.gov/mercury/effects.htm.
- The U.S. Food and Drug Administration maintains a list of medicines that contain mercury at www.fda.gov/cder/fdama/mercury300.htm.
- The U.S. Geological Survey provides an overview of mercury in the environment at www.usgs.gov/themes/factsheet/146-00.
- The Agency for Toxic Substances and Disease Registry provides a toxicological profile of mercury at www.atsdr.cdc.gov/toxprofiles/tp46.html.
- For more information on mercury use in households and for recommendations on how to identify and reduce the release of mercury in your community, visit www.epa.gov/glnpo/bnsdocs/hgsbook for the "Wisconsin Mercury SourceBook."

'Making Sense of Mercury'

"Making Sense of Mercury" is an education and outreach campaign developed by the S.C. Department of Health and Environmental Control. It includes this fact sheet series that provides basic information on mercury. For a better understanding of this important environmental issue, readers are encouraged to review all five fact sheets: "What is mercury?," "Mercury in the environment," "Mercury in the home," "Health risks of mercury exposure," and "Cleaning up mercury spills."

For more information, visit www.scdhec.gov/mercury or call the S.C. Department of Health and Environmental Control's Office of Environmental Community Health at 1-888-849-7241. Information for this fact sheet was provided courtesy of the U.S. Environmental Protection Agency and the Agency for Toxic Substances and Disease Registry.

Glossary

Mercury – a heavy metal (element) that is naturally occurring in the environment; the chemical symbol for mercury is Hg and is taken from Latin, *hydragyrum*, meaning liquid silver

Elemental (metallic) mercury – the pure form of mercury; a shiny, silver-white metal that is a liquid at room temperature and can turn into an invisible, odorless toxic vapor

Inorganic mercury – a compound formed when mercury combines with inorganic elements like chlorine, sulfur and oxygen; often called mercury salts; most are white powders or crystals

Organic mercury – a compound formed when mercury combines with carbon; most common type is methylmercury

Methylmercury – a highly toxic type of organic mercury that is formed naturally in the environment and can lead to human exposures when contaminated fish are eaten

Cinnabar – an ore that naturally contains mercuric sulfide (from which elemental mercury is refined); found mainly in Italy and Spain

Heavy Metals – metallic elements with high atomic weights; (e.g., mercury, chromium, cadmium, arsenic and lead); they tend to build up in the food chain